(12) UK Patent Application (19) GB (11) 2 307 619 (13) A

(43) Date of A Publication 28.05.1997

(21) Application No 9623815.9

(22) Date of Filing 18.11.1996

(30) Priority Data
(31) 9523759 (32) 21.11.1995 (33) GB

(51) INT CL[6]
H04M 3/42 , H04L 12/58

(52) UK CL (Edition O)
H4K KF42 KOD4

(56) Documents Cited
GB 2301260 A GB 2300991 A WO 96/20553 A2

(58) Field of Search
UK CL (Edition O) H4K KF42 KF50A KF50C KOD4
INT CL[6] H04L , H04M
ONLINE: WPI

(71) Applicant(s)
Alexander James Pollitt
Data Connection Ltd, 100 Church St, ENFIELD, Middx, EN2 6BQ, United Kingdom

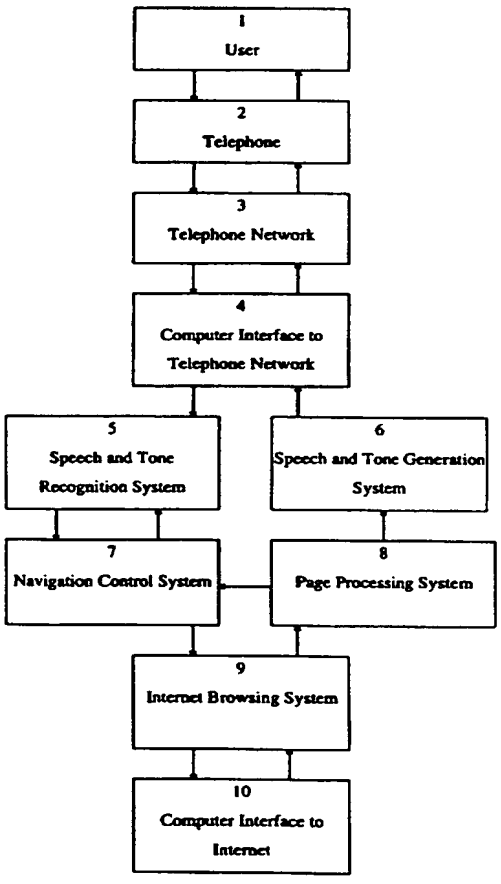
(72) Inventor(s)
Alexander James Pollitt

(74) Agent and/or Address for Service
Data Connection Ltd
100 Church St, ENFIELD, Middx, EN2 6BQ, United Kingdom

(54) Internet information access system

(57) An audio interface to the Internet operated by a user over a telephone system. The interface generates user interpretable audio output (speech and other sounds) and interprets user generated audio input (speech and/or DTMF tones) of control information which is used to control the information transfer process. The speech recognition system of the interface uses a dynamically constructed list of recognisable phrases based on the contents of the current page. Additional pages are generated internally to give the user additional control over the information transfer process.

Figure 1

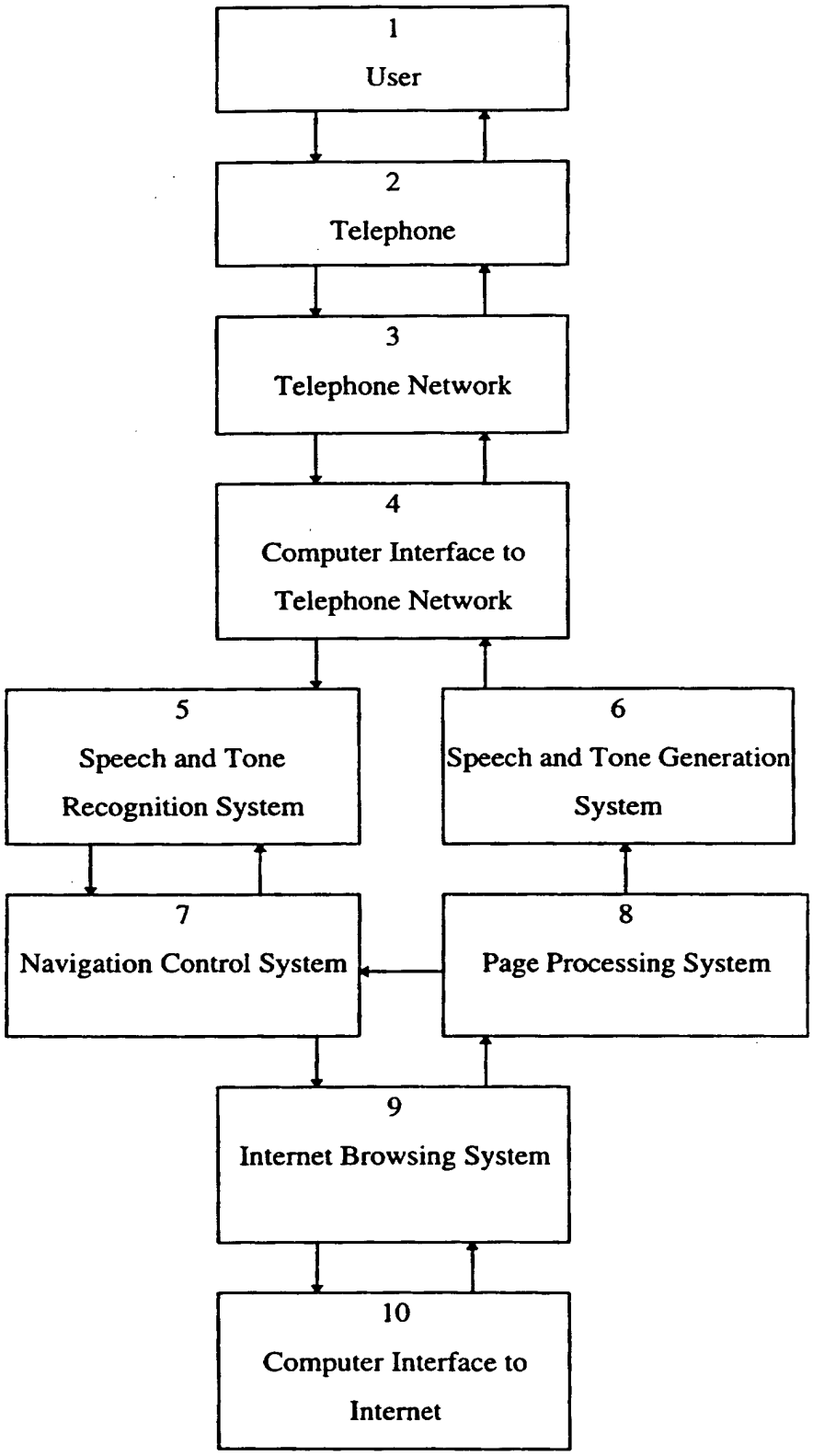


BEST AVAILABLE COPY

GB 2 307 619 A

$NSDOCID: <GB___2307619A_I_>

Figure 1


1
User
2
Telephone
3
Telephone Network
4
Computer Interface to Telephone Network
5
Speech and Tone Recognition System
6
Speech and Tone Generation System
7
Navigation Control System
8
Page Processing System
9
Internet Browsing System
10
Computer Interface to Internet

Internet Information Access System

This invention relates to an audio interface to the Internet.

The Internet is a global network of computers allowing access to millions of pages of information in a variety of formats. Each page of information held on a computer may contain links to other pages either on the same computer or on other computers. The information on the Internet may be accessed using an Internet browser application. The browser application can display the pages of information visually for the user and navigate through the Internet from page to page at the users instruction. A page of information typically correspond to a Web page, an Internet News article, or an Email message. A variety of protocols are used by the World Wide Web browser to access the different types of pages.

To access the Internet a user typically needs his/her own computer with a browser application and a physical connection to the Internet. This means access to the massive quantity of information on the Internet is currently restricted to a relatively small proportion of the population.

According to the present invention there is provided an audio interface to the Internet which generates user interpretable audio output of information and interprets user generated audio input of control information which controls the transfer of pages of information over the Internet.

A specific embodiment of the invention will now be described by way of example with reference to the accompanying diagram (Figure 1) in which the high level components are clearly illustrated.

BNSDOCID: <GB:___2307619A_I_>

The user (1) communicates using a telephone (2) by speaking in a normal voice and/or using the DTMF tones generated by pressing the keys on the telephone. Information retrieved from the Internet is supplied to the user as speech and other audio sounds. Different voices or other audio sounds are used to enable the user to distinguish between standard text and links to other pages of information on the Internet.

The computer interface to the telephone network (4) is implemented using suitable existing technology. The audio signals that are received by the computer interface to the telephone network (4) from the telephone network (3) (i.e. that are generated by the user (1) and telephone (2)) are passed on to the speech and tone recognition system (5). In the reverse direction the audio signals that are generated by the speech and tone generation system (6) are passed on by the computer interface to the telephone network (4) to the telephone network (3) so that the user (1) can listen to them.

The speech and tone recognition system (5) is based on existing technology which is enhanced to incorporate dynamic phrase list recognition. Dynamic phrase list recognition works as follows. For any particular page of Internet information there are a finite number of links that the user may want to select. The dynamic phrase list contains the links in the current page of information. The dynamic phrase list can be used to simplify the implementation of the speech recognition system. When the user speaks the speech recognition system can choose the phrase in the dynamic phrase list which most closely matches its interpretation of the speech. The dynamic phrase list is supplied by the navigation control system (7).

The speech and tone generation system (6) is based on existing technology. The speech and tone generation system (6) is supplied a text representation of the current page by the page processing system (8) and converts it into speech and other audio sounds. Different voices or other audio sounds are used to distinguish between standard text, links to other pages on the Internet, and other attributes of the text such as italic and bold.

BNSDOCID: <GB___2307619A__I_>

The navigation control system (7) processes input from the speech and tone recognition system (5) which it uses to control the movement of the Internet browsing system (9) from one page to another. The navigation control system (7) also supplies the speech and tone recognition system (5) with the dynamic phrase list using the text representation of the current page produced by the page processing system (8) and an internal history of pages processed so far.

The page processing system (8) processes pages supplied by the Internet browsing system (9). Each page typically corresponds to a Web page, an Internet News article, or Email message. The page processing system applies a series of content sensitive filtering, reformatting and conversion operations to convert the page into a text representation that is more suitable for sequential reading. Typical operations include converting date and time information into a simple and consistent format, and identifying and extracting the page specific content from the page's general header and footer information which is less interesting to the user. The text representation of the page produced by the page processing system (8) is used by the navigation control system (7) and the speech and tone generation system (6).

The Internet browsing system (9) implements a variety of protocols for transferring pages over the Internet including World Wide Web pages, Internet News articles and Email messages. In addition it may generate pages of information internally to give the user additional control of the information transfer process. For example, internal pages may be generated to aid the user to construct a reply to an Email message which the Internet browsing system (9) will then send over the Internet using an appropriate protocol.

The computer interface to the Internet (10) is implemented using suitable existing technology.

BNSDOCID: <GB___2307619A_I_>

Claims

1. An audio interface to the Internet which generates user interpretable audio output of information and interprets user generated audio input of control information which controls the information transfer process.

2. An audio interface to the Internet as claimed in Claim 1 wherein the user generated audio input of control information may be normal speech and/or DTMF tones.

3. An audio interface to the Internet as claimed in Claim 1 or Claim 2, wherein the generated user interpretable audio output of information may include speech.

4. An audio interface to the Internet as claimed in Claim 3 wherein different voices or other audio sounds are used to enable the user to distinguish between standard text and links to other pages of information on the Internet.

5. An audio interface to the Internet as claimed in Claim 2 or Claim 4, wherein the speech recognition process is enhanced by using a dynamic phrase list which consists of the phrases that the user can issue to control information transfer process given the current page of information.

6. An audio interface to the Internet substantially as described herein with reference to the accompanying illustration (Figure 1).

7. An audio interface to the Internet substantially as described herein with reference to the accompanying illustration (Figure 1) where the type of information that can be transferred is limited to World Wide Web pages.

8. An audio interface to the Internet substantially as described herein with reference to the accompanying illustration (Figure 1) where the type of information that can be transferred is limited to Email pages.

9. An audio interface to the Internet substantially as described herein with reference to the accompanying illustration (Figure 1) where the type of information that can be transferred is limited to Internet News pages.

BNSDOCID: <GB___2307619A__I_>

The Patent Office

Application No: GB 9623815.9 **Examiner:** Al Strayton
Claims searched: 1-9 **Date of search:** 6 February 1997

Patents Act 1977
Search Report under Section 17

Databases searched:

UK Patent Office collections, including GB, EP, WO & US patent specifications, in:

UK Cl (Ed.O): H4K: KF42; KF50A; KF50C

Int Cl (Ed.6): H04L, H04M

Other: ONLINE: WPI

Documents considered to be relevant:

Category	Identity of document and relevant passage	Relevant to claims
A	GB 2 301 260 A (IBM)	
A	GB 2 300 991 A (RITCHIE...)	
A	WO 96/20553 A2 (ALPHANET)	

5

X	Document indicating lack of novelty or inventive step	A	Document indicating technological background and/or state of the art.
Y	Document indicating lack of inventive step if combined with one or more other documents of same category.	P	Document published on or after the declared priority date but before the filing date of this invention.
&	Member of the same patent family	E	Patent document published on or after, but with priority date earlier than, the filing date of this application.

THIS PAGE BLANK (USPTO)

This Page is Inserted by IFW Indexing and Scanning Operations and is not part of the Official Record

BEST AVAILABLE IMAGES

Defective images within this document are accurate representations of the original documents submitted by the applicant.

Defects in the images include but are not limited to the items checked:

- ☐ BLACK BORDERS
- ☐ IMAGE CUT OFF AT TOP, BOTTOM OR SIDES
- ☑ FADED TEXT OR DRAWING
- ☐ BLURRED OR ILLEGIBLE TEXT OR DRAWING
- ☐ SKEWED/SLANTED IMAGES
- ☐ COLOR OR BLACK AND WHITE PHOTOGRAPHS
- ☐ GRAY SCALE DOCUMENTS
- ☐ LINES OR MARKS ON ORIGINAL DOCUMENT
- ☐ REFERENCE(S) OR EXHIBIT(S) SUBMITTED ARE POOR QUALITY
- ☐ OTHER: _____

IMAGES ARE BEST AVAILABLE COPY.
As rescanning these documents will not correct the image problems checked, please do not report these problems to the IFW Image Problem Mailbox.

THIS PAGE BLANK (USPTO)